

In the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

1 to 5. (Canceled)

1        6. (Currently Amended) The method of performing an N-point  
2 radix-R Fast Fourier Transform in a data processing apparatus  
3 having a data cache comprising the steps of:

4              comparing the data set of input data and twiddle factors with  
5 the size of the data cache;

6              if said data set is smaller than said data cache, performing  
7 said Fast Fourier Transform in  $\log_R N$  stages on all the data set in  
8 one pass; and

9              if said data set is larger than said data cache but smaller  
10 than R times the data cache

11              dividing said input data into R continuous data sets  
12 where each of said R continuous data sets fit within the data  
13 cache;

14              disposing said input data into memory, each R continuous  
15 data set in continuous memory locations with a space in memory  
16 locations from an end of one continuous data set to a  
17 beginning of a next continuous data set equal to the size of a  
18 cache line;

19              separately and independently performing a first stage  
20 radix-R butterfly computations on all the the R continuous  
21 data sets thereby producing R independent intermediate data  
22 sets in a first pass each of which fits within the data cache;  
23 and

24              successively performing second and all subsequent stage  
25 butterfly computations on each independent intermediate data

26       set in turn producing corresponding output data in second  
27       passes.

1       7. (Original) The method of claim 6, wherein:  
2       said Fast Fourier Transform uses complex input data and  
3       complex twiddle factors of M bytes each; and  
4       said step of comparing the data set with the size of the data  
5       cache compares the data cache size to 4 N×M bytes.

1       8. (Original) The method of claim 6, wherein:  
2       said radix-R is radix-2.

1       9. (Original) The method of claim 6, wherein:  
2       said radix-R is radix-4.

10. (Canceled)

1       11. (Original) The method of claim 6, further comprising:  
2       if said data set is larger than R times the data cache  
3              performing I initial stages of radix-R butterfly  
4              computations on all the input data producing R independent  
5              intermediate data sets, where I is the next integer greater  
6              than  $\log_R(D/C)$ , D is the size of the data set and C is the  
7              size of the cache; and  
8              successively performing all subsequent stage butterfly  
9              computations on each independent intermediate data set in turn  
10             producing corresponding output data in second passes.